

Work Order ID 52454

Page 1

Friday, September 25, 2009 7:55:51 AM

Item ID: D212-664-101

Reference:

Revision ID: C

Item Name: Crosstube Fwd

Start Date: 9/25/2009

Start Qty: 1.00

Cust Item ID:

Required Date: 10/12/2009

Req'd Qty: 1.00

Customer ID:

Customer Name:

Approvals:

Process Plan: *PL*Date: *09-9-25* Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Hours

Sequence ID	Work Center ID	Operation Description	Set Up	Run	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr		Revision Nbr									
D212-664-141		Rev C									
100	DC	DOCUMENT CONTROL	0.00	0.00							
	Document Control										
	Memo	Photocopy bluefile and create labels as per PPP D212-664-101 CHG003									
110	Packaging	Pick Kit	0.00	0.00							
	Packaging	Packaging									
	Memo										
120	CNC Bend 2	BENDING MACHINE - CROSSTUBES	0.00	0.00							
	CNC Alpha 160 Bender										
	Memo	Bend tube as per Dwg D212-664-141 using CNC bender program 212-fw and Folio FT015									
130	QC	QC15- Crosstube Dimensional Check	0.00	0.00							
	Quality Control										
	Memo										

*Sorkulov**HA for BG 09/11/03**MP 9/11/04**(IX)**0**MB**09-10-19**2 Sorkulov**(IX)**0*

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Date:[illegible]

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Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____

QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

[illegible]

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Page 4

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Approvals:

Process Plan: _____

Date: _____

Tooling: _____

Date: _____

QC: _____

Date: _____

SPC (Y/N): _____

Date: _____

Hours

Sequence ID	Work Center ID	Operation Description	Set Up	Run	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
200	SprayPaint	Spray Painting per QSI005 4.2	0.00	0.00				PT	09	11	02
	Spray Painting	SprayPaint									
	Memo	1-Prime inside and outside crosstube as per QSI 005 4.2 2-Paint outside crosstube with White Imron as per QSI 005 4.2									
		PRIME: Start Time: 6:00 Fininsh Time: 7:30									
		PAINT: Start Time: 11:00 Finish Time: 12:00									
210	QC	QC14- Inspect Spray Paint	0.00	0.00							
	Quality Control										
	Memo	Then, Wrap in plastic bag to protect from scratches									
220	Crosstubes	Crosstubes	0.00	0.00							
	Crosstubes										
	Memo	1- Lightly scuff the bonded area using a 320 grit sand paper and clean the area with 41058 wash 'n' wipe 2-Install supports with magnobond as per QSI 015 Adhere for for 12 Hrs A/R 6398 Magnobond Batch: 112417									

Torgue: M 09 11 03 ①

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Page 5

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Customer ID:

Customer Name:

Approvals:

Process Plan: _____

Date: _____

Tooling: _____

Date: _____

QC: _____

Date: _____

SPC (Y/N): _____

Date: _____

Hours

Sequence ID	Work Center ID	Operation Description	Set Up	Run	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
230	QC	QC5- Inspect part completeness to step on W/O	0.00	0.00	278 or 1403			(X)	✓		
Quality Control											
Memo											
240	Packaging	Pick Kit	0.00	0.00							
Packaging											
Memo											
250	QC	QC4- 100% Inspect kits for completeness	0.00	0.00	- 8 or 1404			(X)	✓		
Quality Control											
Memo											
260	Packaging	Packaging	0.00	0.00							
Packaging											
Memo											
Identify and pack for shipping as per PPP D212-664-101			New R								
270	QC	QC21- Final Inspection - Work Order Release	0.00	0.00							
Quality Control											
Memo											

Per 11/4 (1)

09/11/04

Bl 0911-4

Picklist Print

Friday, September 25, 2009 7:55:50 AM

Page 1

Work Order ID: 52454

Parent Item: D212-664-101RevC

Parent Item Name: Crosstube Fwd

Comments:

Start Date: 9/25/2009

Required Date: 10/12/2009

Start Qty: 1.00

Required Qty: 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
---------------------------------	------------------------	---------------	-------------	---------------------	------------------	-----------------	--------------------	----------------	--------------------------	---------------	----------------	--------

D212-664-
101TRNRevC

Manufactured No

110

Each

2.0000

1.0000



Crosstube Turning Detail



6-52738 MB 09-10-15

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

FG

2

51942

1

51943

1

D3595-063-450RevA

Manufactured No

230

Each

68.6689

4.2105



RUBBER CUSHION



Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

LG

63.7

50953

63.7

Main Warehouse

ST

4.9689

38959

2

43210

2.59

46465

0.3789

ml 09 11 02

Picklist Print

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Parent Item: D212-664-101RevC

Parent Item Name: Crosstube Fwd

Comments:

Start Date: 9/25/2009

Required Date: 10/12/2009

Start Qty: 1.00

Required Qty: 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
MS21920-25		Purchased	No			220	Each	159.0000	4.0000			
Clamp(per MIL-DTL-8783C)												

Warehouse Loc Qty Loc Code
Location

Main Warehouse

ST	159	
107456	2	
108111	3	
108975	17	
109181	48	
109644	10	
111282	4	
111429	25	
<u>112495</u>	50	

ml 09 10 02

D2893-1RevB

Manufactured No

220

Each

48.0000

2.0000



2.75 Support

Warehouse Loc Qty Loc Code
Location

Main Warehouse

ST	48	
25657	6	
46488	4	
<u>47109</u>	18	
47637	20	

ml 09 11 02

Picklist Print

Page 3

Friday, September 25, 2009 7:55:50 AM

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Parent Item: D212-664-101RevC

Parent Item Name: Crosstube Fwd


Comments:

Start Date: 9/25/2009

Required Date: 10/12/2009

Start Qty: 1.00

Required Qty: 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
D3428-1RevA		Manufactured	No			240	Each	29.0000	1.0000			
												
Placard												

Warehouse Loc Qty Loc Code
Location


Main Warehouse

ST096

29

~~50790~~

29

AN6-35A		Purchased	No			240	Each	86.0000	4.0000			
												
BOLT												

Warehouse Loc Qty Loc Code
Location


Main Warehouse

ST

86

112314

86

AN6-36A		Purchased	No			240	Each	121.0000	4.0000			
												
Bolt												

Warehouse Loc Qty Loc Code
Location

Main Warehouse

ST

121

109632

1

110382

2

111650

18

112314

100

Friday, September 25, 2009 7:55:50 AM

Shop Packet Print

Page 3

Picklist Print

Page 4

Friday, September 25, 2009 7:55:50 AM

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Parent Item: D212-664-101RevC

Parent Item Name: Crosstube Fwd



Comments:

Start Date: 9/25/2009

Required Date: 10/12/2009

Start Qty: 1.00

Required Qty: 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
MS21042L6  Nut		Purchased	No			240	Each	697.0000	6.0000		9/11/3	SP

Warehouse Loc Qty Loc Code

Location

Main Warehouse

ST	697
105077	22
110002	5
111548	70
111578	400
112492	200

AN960JD616



Washer

Purchased

No

240

Each

538.0000

18.0000



9/11/3 SP

Warehouse Loc Qty Loc Code

Location

Main Warehouse

ST	538
112314	538

10 x SP

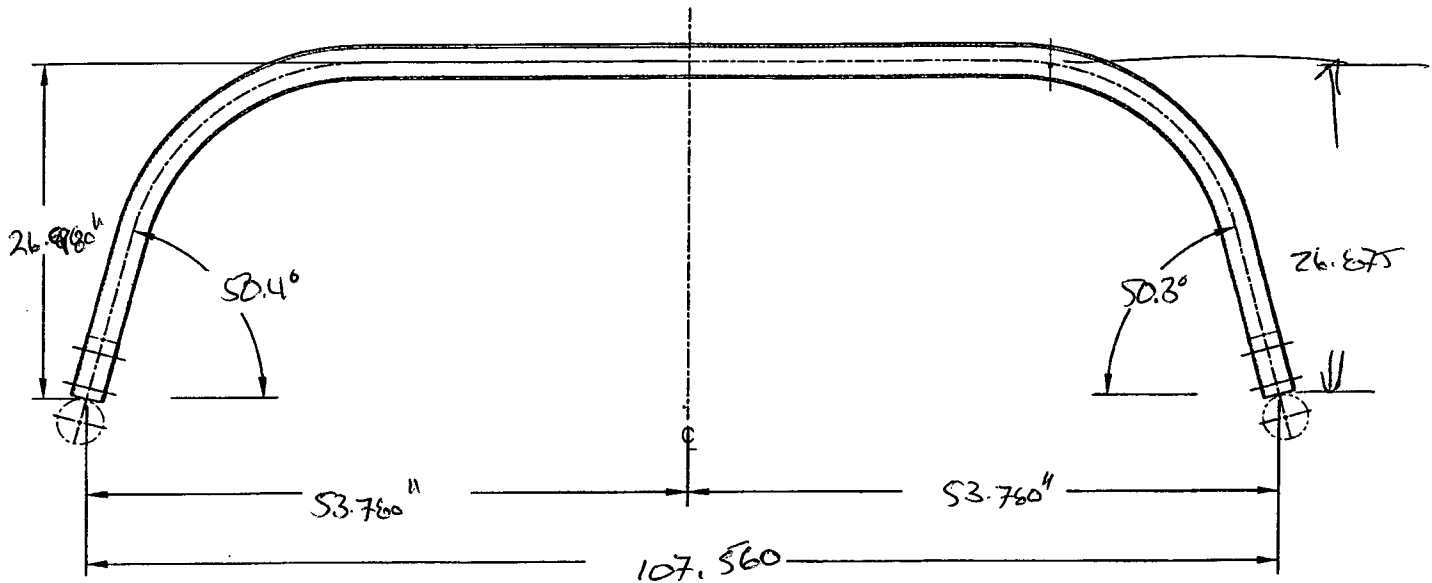
Friday, September 25, 2009 7:55:50 AM

Shop Packet Print

Page 4

DART AEROSPACE LTD		Work Order:	52454
Description: Crosstube High Fwd (205/212/412)		Part Number:	D212-664-101
Inspection Dwg: D212-664-141 Rev: C		Page 1 of 1	

Required Dimension	Min	Max
Height	26.79	27.05
1/2 Span	53.59	53.85
Angle	49	52
Total Span	107.18	107.7



Comments

QC15 Inspection	8
Date	07/10/19

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	
B	07.05.31	Dimensions updated per Dwg Rev C	KJ/JM	



DESIGN PH	DRAWN BY PH	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED GP	APPROVED [Signature]	DRAWING NO. D212-664-141	REV. C SHEET 1 OF 3
DATE 07.03.08		TITLE XTUBE ASS'Y (205/212/412 HI FWD) NTS	
A	00.12.12	NEW ISSUE	
B	05.02.04	ADD HOLES FOR COMPATABILITY WITH BHT/AA SKIDTUBES	
C	07.03.08	REMOVE -851 ABRASION STRIP; ADD MAGNOBOND 6398, CUSHION, REVERSE CLAMPS	

RELEASED

07.04.24

DEO ATTACHED

Qty	Part Number	Description
X	D212-664-141	CROSSTUBE ASSEMBLY (205/212/412 HIGH FWD)
1	D6005-128	CROSSTUBE
2	D2893-1	SUPPORT
4	D3595-063-450	RUBBER CUSHION
4	MS21920-25	CLAMP (OR MS21920-26)
A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)

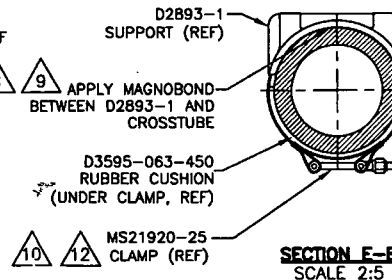
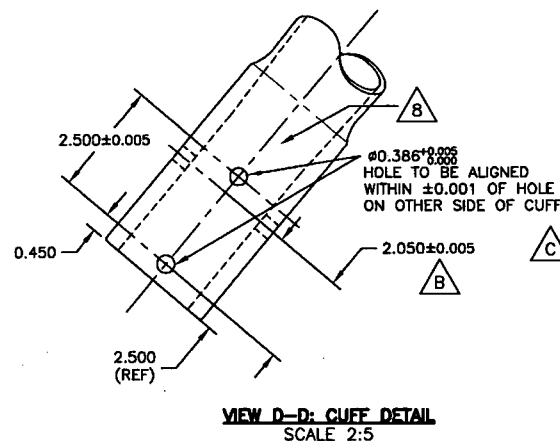
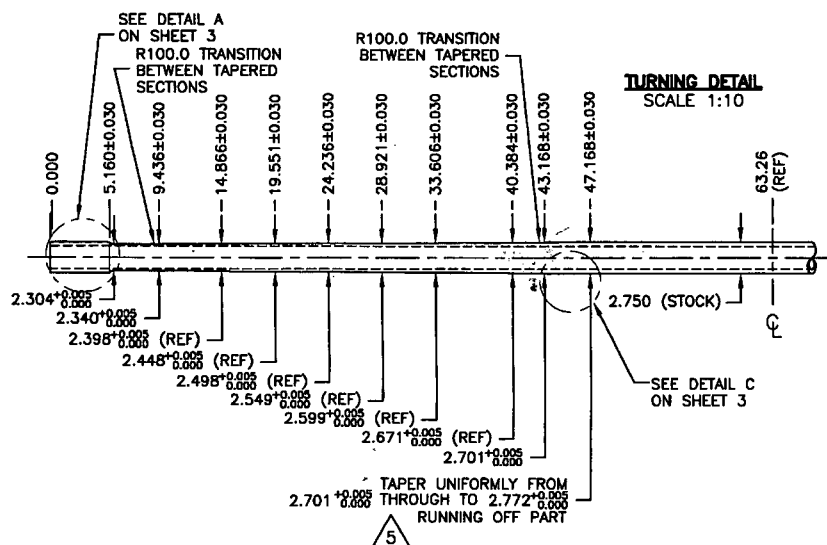
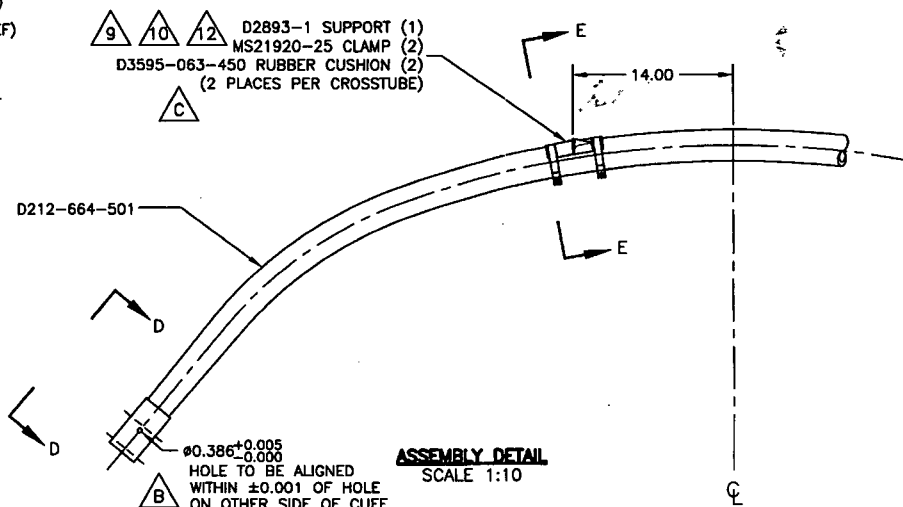
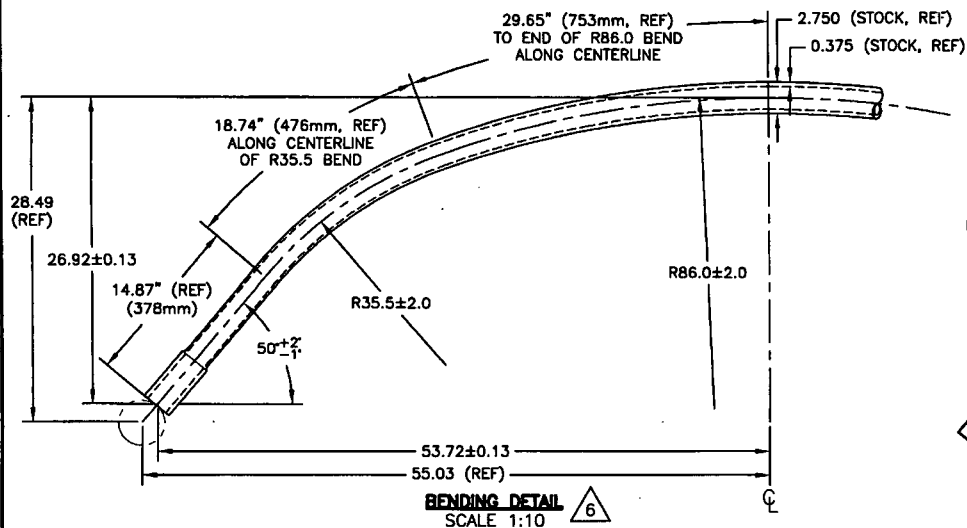
GENERAL NOTES:

- 1) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 2) MATERIAL: MANUFACTURED FROM D6005-128
FINISHED LENGTH = 126.51±0.020
- 3) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 4) PART IS SYMMETRIC ABOUT CENTERLINE.
- 5) RUN-OFF PART. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
- 6) BEND PROGRESSIVELY WITH A MINIMUM OF 3 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 7) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 8) SCRIBE DART PART NUMBER AND BATCH NUMBER IN THIS AREA WITH VIBRATING STYLUS.
- 9) INSTALL D2893-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 10) INSTALL MS21920-25 CLAMPS (OR -26) WITH D3595-063-450 RUBBER CUSHIONS TO SECURE THE D2893-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE OF CROSSTUBE SUPPORT
- 11) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 12) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

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W/O 52454



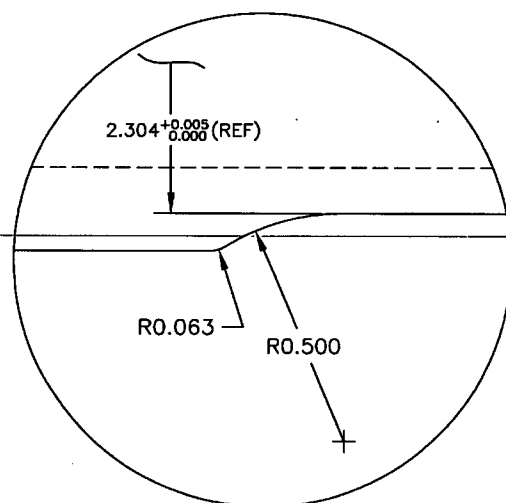
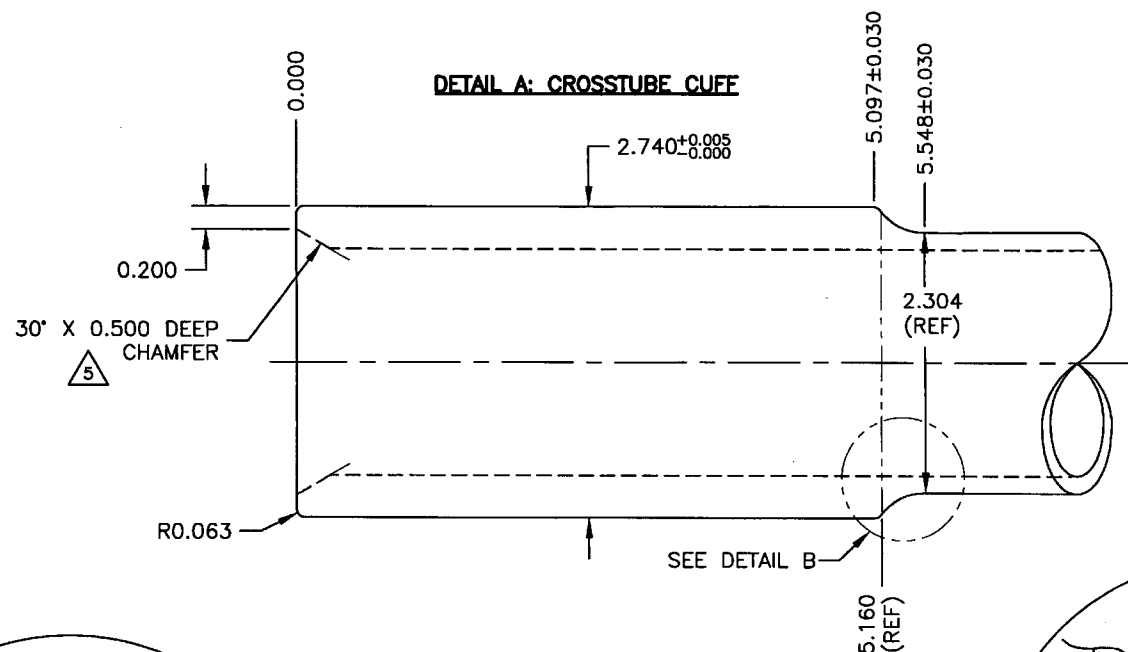
RELEASED
07.04.24
DEO ATTACHED

COPYRIGHT © 2008 BY DART AEROSPACE LTD.		DESIGN	PH	DRAWN BY	PH	DART	DART AEROSPACE LTD. HARRISBURG, ONTARIO, CANADA	REV. C
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.		CHECKED	97	APPROVED	4			
		DATE	07.03.08	DRAWING NO.	D212-664-141	SHEET 2 OF 3		
		XTUBE ASS'Y (205/212/412 HI FWD) 1:1						
		SCALE						

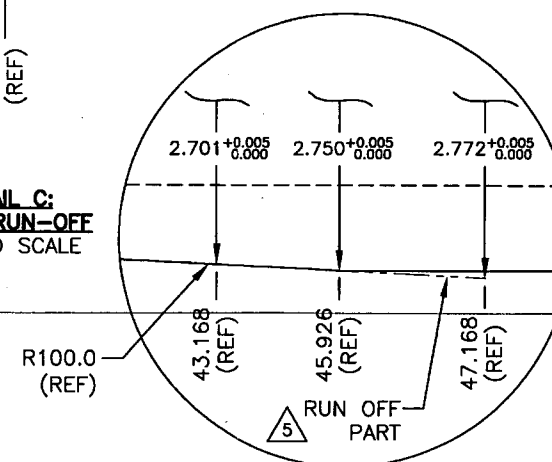
w/o 52454

RELEASED
67.04.24 GP
PER ECN 993

DEO ATTACHED



DETAIL C:
TAPER RUN-OFF
NOT TO SCALE



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DESIGN PH	DRAWN BY PH	DART	DART AEROSPACE LTD. HAMPSHIRE, ENGLAND, CANADA
CHECKED J	APPROVED J	DRAWING NO. D212-664-141	REV. C SHEET 3 OF 3
DATE 07.03.08	TITLE XTUBE ASS'Y (205/212/412 HI FWD)	SCALE 1:1	

W/O 52454

DRAWING NO. D212-664-141	TITLE CROSSTUBE	REV. C	DART AEROSPACE LTD ENGINEERING ORDER	D.E.O. NO. D212-664-141-C-1	SHEET NO. SHEET 1 OF 1	SCALE NTS
DRAWN AD	CHECKED R4	MFG. APPR. E	APPROVED W/D	DE APPR. H		
DATE 09.05.01	DATE 09.06.15	DATE 09.06.15	DATE 09/06/15	DATE 09/06/16		

CHANGE:

ADD THE FOLLOWING CROSSTUBE ASSEMBLY:

Part Number	Description
D212-664-141B	CROSSTUBE ASSEMBLY (214 HIGH FWD)

THE D212-664-141B CROSSTUBE HAS THE SAME PARTS LIST AS THE D212-664-141 CROSSTUBE. HOWEVER, INSTALL THE SUPPORTS AS SHOWN IN FIGURE 1 OF THIS ENGINEERING ORDER. THE NEW KIT IS OTHERWISE ASSEMBLED PER THE D212-664-141 CROSSTUBE.

RELEASED
09/06/22

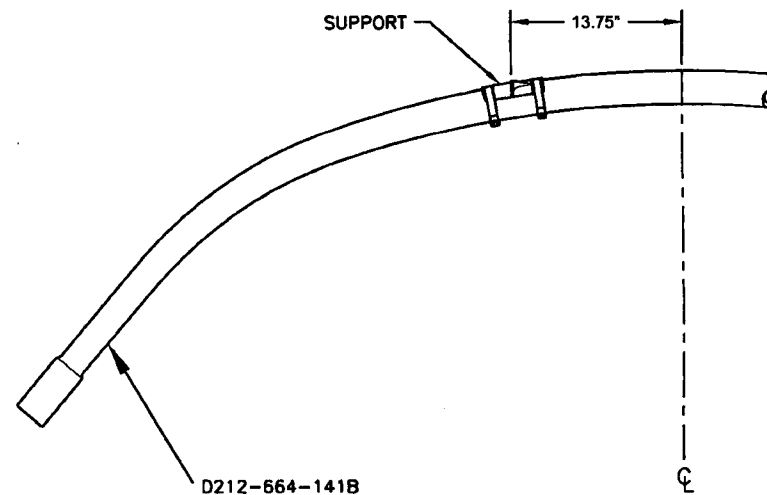


FIGURE 1 - SUPPORT INSTALLATION



LIQUID PENETRANT TEST REPORT

P- 15030

PAGE 1 OF 1

ION Dart Aerospace DATE Oct 28th 09 TIME AM ☐ PM ☐
SS Linda Lacelle ACUREN JOB NO. 188-09-1626
S 1270 Aberdeen St. POWO No. 10655
T Hawkesbury WORK LOCATION Hawkesbury
EXAMINED X-Tubes D212-664-201, D212-664-107, D212-664-101 - D206-667-103 ACCEPTANCE STD. ASTM 1417/021-038 REV./DATE 2005
Sub #'s 51068, 51069, 52218, 52454, 52455, 52456, 52539, 52540

DESCRIPTION PROCEDURE No. LT-000 REV./DATE TECHNIQUE No. LT-TEC# 02 REV./DATE
O. D212-664-201, D212-664-107, D212-664-101 MATERIAL AL3015 ALUM. THICKNESS
WET FLOURESCENT LIQUID PENETRANT INSPECTION CARRIED OUT
ON 100% EXTERNAL SURFACE

DETAILS
BRAND MAGNAFLUX ☒ FLUORESCENT ☐ VISIBLE ☒ WATER WASH ☐ SOLVENT REMOVABLE ☐ POST EMULSIFIED
EQUIP. ZL67 MINIMUM DWELL TIME 45 MIN. BLACK LIGHT S/N 8178 ☒ OUTPUT > 1000 μ W/cm² ☐ AMBIENT < 2 fc
REMOVER H2O MINIMUM DRY TIME > 10 MIN. LIGHTING EQUIP. ☒ FLASHLIGHT ☐ TROUBLELIGHT ☐ OUTPUT > 100 fc @ SURFACE
OPER SKDS2 MINIMUM DWELL TIME 10 MIN. OTHER CAL JUNE 09
OPER TYPE ☒ NON AQUEOUS ☐ AQUEOUS ☐ DRY LIGHT METER S/N CAL DUE DATE DEC 09

SURFACE
PRE CONDITION ☐ AS GROUND ☐ AS WELDED ☒ MACHINED ☐ SHOT BLASTED ☒ CLEAN BARE METAL
PRE TEMPERATURE ☐ < -4°C/ 20°F ☐ -4°C/ 20°F TO 10°C/ 50°F ☒ 10°C/ 50°F TO 52°C/ 125°F ☐ > 52°C/ 125°F
UNIT (☐ METRIC ☐ IMPERIAL)

WET FLOURESCENT LIQUID
PENETRANT INSPECTION
CARRIED OUT ON 100%
EXTERNAL SURFACE ON X-TUBES
52540: ACCEPTABLE
Sub #'s 51068: ACCEPTABLE
51069: ACCEPTABLE
52218: ACCEPTABLE
52454: ACCEPTABLE
52455: ACCEPTABLE
52456: ACCEPTABLE
52539: ACCEPTABLE

MA 08 10 29

Services
Acuren Group Inc. to perform services extends only to those services provided for in writing. Under no circumstances shall such services extend beyond the performance of the requested services. It is expressly understood that the descriptions, comments and expressions of opinion reflect the opinions or observations of Acuren Group Inc. based on information and assumptions supplied by the owner/operator and are not intended nor can they be construed as warranties. Acuren Group Inc. is not assuming any responsibilities of the owner/operator and the owner/operator retains complete responsibility for the engineering, manufacture, repair and use decisions as a result of the information provided by Acuren Group Inc. In no event shall Acuren Group Inc.'s liability in respect of the services referred to herein exceed the amount paid for such services.
of Care
In performing the services provided, Acuren Group Inc. uses the degree, care and skill ordinarily exercised under similar circumstances by others performing such services in the same or similar locality. No other warranty, expressed or implied, is made or intended by Acuren Group Inc.

TECHNICIANS
REPRESENTATIVE Chantal Levesque DTR # E-27155
TECHNICIAN (SIGNATURE): [Signature] SIGNATURE
(PRINT): FREDERICK CHAGNON REPORT REVIEWED BY:
1st TECHNICIAN 2nd TECHNICIAN
CGSB LEVEL II SNT LEVEL II CGSB LEVEL II SNT LEVEL II
CGSB REG. No. 10560 CGSB REG. No. 10560